



Remarks by
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to the:

COUNCIL ON FOREIGN RELATIONS

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AS PREPARED FOR DELIVERY

Thank you all very much. It's been my pleasure to visit your Council cohorts in the DC area several times now and I've been very much looking forward to meeting with you all tonight.

I was especially pleased to learn that your Council is making an effort to bring in term members each year from an accomplished and dynamic group of young professionals drawn from diverse fields. Those of you in this group are very much like the *Space Generation Advisory Council*, a group of young professionals between the ages of 18 and 35 from more than 100 countries who work in support of the *United Nations Programme on Space Applications*. It is a non-governmental organization and professional network that "...aims to bring the views of students and young space professionals to the United Nations (UN), space industry and other organizations."

One of my great joys as Administrator is getting the chance to meet with young people all over the world and while it may not feel like it, you can take it from me (since I'm now 69) – being any age less than 70 is still young.

SPACE & INTERNATIONAL COLLABORATION

As we get started, I want to share with you a couple quotes:

Quote: "*The first day or two up there,*" and by "up there" the person who said was talking about being in space, "*you try to recognize the countries.*" Then the speaker names his own country and says, quote "*It stands out. It's very distinct. Then, you keep missing the countries and you look only at the continents. By the sixth day, the whole world becomes a beautiful blue and white and yellow painting. Those boundaries really disappear. With me they still are.*"

Second quote: *"There is no better place to emphasize the unity of people in the world than flying in space. We are all the same people, we are all human beings, and I believe that most of us, almost all of us, are good people."*

The first quote is from Prince Sultan Salman Abdulaziz Al-saud of Saudi Arabia after flying as a member of the STS-51G shuttle mission in June 1985. The second, by the late Israeli astronaut Ilan Ramon during his ill-fated STS-107 mission in January 2003.

I thought about these quotes a lot while I was in Jerusalem last month for the 66th International Astronautical Congress. I don't have to remind the Council on Foreign Relations that these are challenging times in that part of the world. Yet here we were, an international community, gathered in this place to talk about our shared destinies.

Having been blessed to see our planet from space, I can attest that from up there you don't see borders. You see a place seeming at peace, in tranquility and one beautiful planet. If you look really closely, you can see something else: it's a big sign that says, "Help wanted." [Not really!]

I came here today to tell you that our planet needs you. We need your leadership. We need your ingenuity. We need your imagination.

For those of you still in your thirties or younger, you're in that sweet spot in your life when on the one hand you're old enough to be role models and mentors. On the other hand, you're still young enough that your professional and civic lives are really just beginning and you're more likely to be forgiven for your errors and inactions than later in life. Some of you may be parents already. Others might have younger siblings. Many of you likely supervise interns or younger staff. Perhaps you might also volunteer as a Big Sister or Big Brother, conduct alumni interviews for your Alma mater, coach a youth soccer or Little League team and so forth.

In many ways, your future lives and careers will be defined by how we respond to the question of how we as one planet can come together to tackle some of our greatest challenges.

I am here this evening to tell you that I believe space exploration is one of the most important tools your generation will use to bring about the better future that you deserve – a more peaceful future; a greener future.

Yours will be a future where human beings, as President Obama has said, have pushed further into the universe not just to visit, but also to stay.

To me, public diplomacy and cooperation in space go together like peanut butter and jelly. They just belong together.

As Administrator of NASA I often meet with the heads of the other space agencies across the globe and they frequently tell me that they are looking to the United States and will follow our lead. We have also been working very hard to help countries with emerging space programs get up and running and reach the next level.

All told, at NASA we have roughly 700 active agreements with more than 120 international partners. While the purpose of all these things is scientific and technological, it's not lost on me that, like so many things when it comes to space, there is also a spin-off benefit.

Folks across the world are reminded that we Americans are a generous, compassionate, innovative and peaceful people.

When I was the age of many of you, much was made about the fact that our country was in a "space race" with the Soviet Union.

Today, a child who is 15 years old or younger has lived every day of her or his life while human beings from multiple countries are living and working together in space aboard the International Space Station. I maintain that the Space Station ought be considered for a Noble Peace Prize. Think about this: tens of thousands of people from across 15 countries have been involved in its construction and operations – all working toward common goals of discovery, understanding, and human progress.

HOW WE GOT HERE

The future of space exploration will create some remarkable opportunities for your generation. In fact it already has, and these opportunities can be summarized in a word: "MARS."

Let me explain why I say that ... Our story begins with President Dwight Eisenhower. You see, Presidents since Eisenhower have floated the idea of going to Mars. But about twelve years ago, we had a horrible, horrible setback. On February 1, 2003, we lost Space Shuttle Columbia.

After giving things a long, hard look, the Columbia Accident Investigation Board made the recommendation that the Space Shuttle Program should be phased out.

The Shuttle had already had a remarkable, three decades long run like no other. I traveled to space four times on the Shuttle and I can tell you that I loved this spacecraft. But every technology evolves over time and although this was a decision to which I did not arrive lightly, I agreed with their recommendation, as did many in the space community at the time.

President George W. Bush agreed as well and he made what I believe was the right decision to direct the phase out of the Space Shuttle Program.

Fast-forward a few years to winter, 2009. Upon taking office, President Obama asked an independent committee chaired by former Lockheed CEO Norm Augustine to review the nation's plans for human spaceflight. The committee included astronauts, scientists, executives, educators, engineers and a retired Air Force General – people as distinguished as the late Sally Ride.

Their findings, quite frankly, were sobering. I quote: *“The U.S. human spaceflight program appears to be on an unsustainable trajectory.”*

A few months after the report's release, in April 2010, President Obama came to Cape Canaveral and delivered what I consider a major space policy address. In it, he laid out a plan to replace this unsustainable trajectory with a clear, affordable, financially sustainable and ambitious way forward ... a way forward that expands our presence deeper into the universe while strengthening our nation's leadership here at home.

THE PRESIDENT'S PLAN

The President called for expanding robotic exploration of the solar system.

He asked NASA to move forward with the magnificent James Webb Space Telescope that will be sent a million miles from Earth.

He ramped up NASA's Earth Science missions so that we can learn more about our own planet, including our changing climate.

The centerpiece of the President's plan was (and is) a *Journey to Mars* that will culminate with sending American astronauts to an asteroid in the 2020s and the Red Planet in the 2030s.

To complete this Journey, the President envisioned that NASA would continue to develop the spacecraft, rockets and other technologies that will bring American astronauts to deep space. As part of these efforts we'd continue working with

commercial and international partners on the technologies that drive exploration and have a legacy of creating spin-off benefits here on Earth. (And I'm referring both to economic benefits and benefits to our health and quality of life).

At the same time, we would extend the life of the International Space Station in low-earth orbit to at least 2024.

To replace the Space Shuttle, we'd work with American commercial partners to send cargo and crew to the Station – thus helping facilitate a robust commercial space market and a dependable commercial launch system.

WHERE WE ARE FIVE YEARS LATER

Five years after the President challenged NASA to send astronauts to Mars in the 2030s; we are closer to sending human beings to the Red Planet than ever before in human history.

Meanwhile, a new consensus is emerging in the scientific and policy communities around NASA's roadmap and timetable for making this happen.

When the President laid out his plan in 2010, he stood in front of the *Orion* spacecraft– the technological foundation for future deep space missions. Today, *Orion* has flown farther into space than any spacecraft built for human passengers has flown in more than four decades.

The Space Launch System (SLS) rocket that will someday propel American astronauts to deep space has moved from concept to development and it's hitting critical milestones in its construction and assembly.

After pledging to extend the life of the International Space Station for five years, the President has now extended it for ten – to at least 2024. American astronaut Scott Kelly is half way through his Year In Space and we'll be able to study the effects of such a long duration mission and to benchmark them with his twin brother Mark, who is here at home on Earth.

We've recently announced exciting discoveries about flowing water on Mars and the fate of much of the Martian atmosphere.

As all this is going on, our American industry partners are now launching cargo missions to the ISS – and they're doing it from U.S. soil. I am optimistic we're on

pace to launch our first commercial crew flights from American soil in just a couple years.

I should note that there are 350 companies working across 35 states toward the goal of bringing these launches home. So there is a lot at stake, not only in terms of discovery and exploration, but also in terms of job creation, growth and opportunity. Meanwhile, every day, Americans are going to work in good jobs at businesses that are partnering with NASA to develop the technologies that drive exploration.

Perhaps, most importantly, our Journey is starting to capture the public's hearts, minds and imagination. There's a tangible sense I get as I travel and meet folks that NASA is "en vogue" right now.

This "coolness" factor is what inspires young kids to want to study science or write a science fiction story – and all these things make a difference.

MARS MATTERS

With all this said, some of you – I hope it's just a few of you – might be asking, ok, but why does all this matter? Why go to Mars?

This brings us to the "audience participation" part of our program. When I point to the audience, I want you to repeat after me (Point)... "Mars matters." (*Practice once*)

Because its formulation and evolution are comparable to Earth's (Point)... Mars matters.

Because we know that at one time it had conditions suitable for life (Point) ... Mars matters.

Because what we learn about the Red Planet may tell us more about our own home planet's history and future ... and because it might just help us unravel the age-old mystery about whether life exists beyond Earth (Point)... Mars matters.

WHERE ARE WE HEADED

When I think of the world in which your kids and my granddaughters will be raising their own children ... I see a world where their kids view human beings living and working on Mars as a fact of life (much like they view living and working on the International Space Station today) ... A future, where NASA and its international partners are using Mars as a stepping stone to the rest of the solar system.

I see a future, where a robust private space industry is launching human beings, cargo and satellites of all sizes to space at a significantly lower price-point – thanks to the work we’re doing today to make launches more affordable and to advance emerging small-satellite technologies like “CubeSats” and “Nanosats.”

... A future where the next great American company utilizes technologies developed for space travel to develop a product that improves our quality of life here on Earth.

... A future where flying from Washington to Los Angeles is a better experience both for people in the plane and on the ground because we’ve succeeded in reimagining air traffic management, and we’ve made flight cleaner, greener, safer and quieter. By flight I mean both airplanes and helicopters.

I see a future where our grandchildren’s children are drinking cleaner water, breathing cleaner air and making use of cleaner energy, not only because NASA has helped us better understand climate change, but because of the work our scientists are doing in areas like green aviation and water purification.

I see a future where fewer Americans are losing a sister or a son because the medical technologies we perfect to protect our astronauts from exposure to radiation on a long-duration spaceflight help revolutionize medicine.

Or because the technologies we’ve developed to detect signs of life on other planets continue to help emergency workers listen for beating hearts in the rubble after a disaster.

I see a world where girls and young people of color are more excited about pursuing education in science, technology, engineering, the arts and math. A world where, unlike today, there will no longer be any states in the Union where no women take the Advanced Placement AP Computer Science exam – and we will accomplish this, thanks in part to NASA’s work to promote STEM education and careers.

I see a future where people in even the most remote corners of our world have access to Wi-Fi – as do astronauts living and working in space.

I see a future where maybe, just maybe, humanity finds the answer to the age-old question of whether we’re alone in the universe.

CONCLUSION

While none of us can know for sure what the future has in store, there is one thing we can say with a good degree of certainty: none of these things can happen on their own. They will require future leaders to continue to make the choices that point us in this direction: Future presidents, future Administrators and future citizens.

President Obama has set us on a visionary course; it's my sincere hope that future leaders from all sides of the political spectrum see it through ... because I truly believe the sort of future I laid out is within our grasp.

As I close, I want to share with you a quote from a Department of State Telegram, written in July 1969: Quote: *"The Russian press was surprisingly generous with its praise of the men behind Apollo 11 and American space research in general during the days that the historic moon voyage was in progress. But now they seem to fear that the landing may have increased respect for the Americans around the world ..."* (It was the Cold War after all)

Another State Department telegram read: *"Five thousand Hungarians walked through the American Embassy yesterday. They came to pay tribute to Apollo 11. They came in overalls spattered with paint, in smocks, in tie and suit. Without shirts, old and bent, young and athletic, students, workers, old people."* End quote. It noted that even the secret police were *"cooperative and good-natured."*

Indira Gandhi, then the Prime Minister of India, declared that the moon landing was *"one of the most exciting and significant moments"* in human history.

The Queen of England reportedly stayed up with her children to watch. The Pope spoke about humankind's pursuit of a *"new destiny"*. In New York City, people took to the streets to dance and to celebrate.

The Houston Chronicle wrote quote *"For a moment it seemed that all men were brothers ... Communist journalists congratulated American scientists. Israeli photographers beamed at Egyptian broadcasters. Brown hands grasped white ones and few eyes were dry ... the word went out in 30 languages to 1535 radio and television networks to 1056 newspapers and to 445 magazines in 57 countries"*.

We witnessed similar worldwide reactions on the evening that *Curiosity* touched down on Mars after surviving its 'seven minutes of terror' through Martian atmospheric entry. Just think of what it will be like when you're with your loved ones watching the first astronauts from Earth reach Mars.